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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

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July 11, 1997

Mr. William F. Caton, Acting Secretary  
Federal Communications Commission  
1919 M Street, N.W., Room 222  
Washington, D. C. 20554

In the Matter of:

Price Cap Performance Review  
for Local Exchange Carriers

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)

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CC Docket No. 94-1

Dear Mr. Caton:

Enclosed are an original and eleven copies plus two extra public copies of the Petition for Reconsideration of Cincinnati Bell Telephone Company in the Fourth Report and Order in the above referenced proceeding. A duplicate original copy of this letter and attached Petition is also provided. Please date stamp this as acknowledgment of its receipt and return it. Questions regarding this Petition may be directed to Patricia Rupich at the above address or by telephone on (513) 397-6671.

Sincerely,

Eugene J. Baldrate

Enclosure

cc: James Schlichting, Chief, Competitive Pricing Division  
International Transcription Services, Inc.

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Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554

In the Matter of	)	
	)	
Price Cap Performance Review	)	CC Docket No. 94-1
for Local Exchange Carriers	)	

**PETITION FOR RECONSIDERATION**

Cincinnati Bell Telephone Company ("CBT"), pursuant to Section 1.429 of the Commission's rules,<sup>1</sup> respectfully requests that the Commission reconsider its May 21, 1997 First Report and Order in the above-captioned proceeding.<sup>2</sup> Specifically, CBT asks the Commission to reconsider its decision to prescribe a single X-Factor for all price cap LECs. As more fully discussed herein, the 6.5 percent X-Factor adopted by the Commission is clearly inappropriate for CBT. Moreover, based on previously submitted data in this and in other proceedings, CBT believes that the 6.5 percent X-Factor is similarly inappropriate for the other mid-size LECs that have elected price cap regulation. Accordingly, CBT submits that the Commission should reexamine the differences between the mandatory price cap LECs and the elective price cap companies and adopt a more appropriate lower X-factor for these smaller carriers. CBT takes no position relative to the methodology used by the Commission to calculate the X-Factor or whether the 6.5 percent X-Factor is appropriate for the mandatory price cap LECs, which issues are the subject of various appeals.

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<sup>1</sup> 47 C.F.R. 1.429

<sup>2</sup> In the Matter of Price Cap Performance Review for Local Exchange Carriers, CC Docket No. 94-1, Fourth Report and Order, (FCC 97-159), released May 21, 1997 (hereinafter, "the Price Cap Order").

## I. INTRODUCTION

On June 16, 1997, CBT, pursuant to Special Permission No. 97-177, filed a tariff transmittal reflecting its initial election of price cap regulation, effective July 1, 1997. Prior to this election, CBT had been subject to Optional Incentive Regulation (OIR). In its June 13, 1997 application for special permission, CBT indicated that it was very concerned about certain actions taken in the Price Cap Order, particularly the Commission's adoption of a single X-Factor of 6.5 percent for all price cap LECs. However, as CBT went on to explain, the rapid advance of competition in the Cincinnati area has effectively forced CBT to "elect" price cap regulation in order to gain the flexibility and access reforms it needs to compete.

The Commission's decision to delay access reform for non-price cap carriers clearly had a significant impact on CBT's decision to elect price cap regulation. As the Commission recognized in the access reform proceeding, the need for access reform is most immediate for the LECs that are most vulnerable to competition from interconnection and the availability of unbundled network elements.<sup>3</sup> CBT is clearly among the LECs in that category. CBT serves a relatively small, but densely populated, service territory covering the greater Cincinnati metropolitan area. These characteristics make CBT's service territory very attractive to local exchange competitors, as evidenced by the number of new entrants who have sought and received authority to provide local exchange services in the Cincinnati area.<sup>4</sup> Thus, CBT clearly faces the same competitive pressures as the larger price cap LECs. As a result, CBT needs the

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<sup>3</sup> First Report and Order, CC Docket No. 96-262, at footnote 37.

<sup>4</sup> These new entrants include such telecommunications giants as AT&T, MCI, Sprint, Time Warner, ICG Access, Inc. and others. In fact, the Kentucky Public Service Commission recently issued an order in an interconnection arbitration proceeding initiated by ICG Access, Inc. that sets the stage for competition in Kentucky. Similarly, in Ohio, CBT expects decisions from the Public Utilities Commission of Ohio in two interconnection arbitration proceedings: one involving MCI, the other involving ICG Access, Inc. CBT has concluded interconnection agreements with wireless providers and anticipates that it will soon conclude agreements with such landline providers.

same flexibilities as the price cap carriers in order to compete effectively. Unfortunately, the access reforms adopted in the Commission's recent access charge order were largely limited to price cap LECs. As a result, CBT had to elect price cap regulation at this time in order to compete. CBT was not in a position to wait for the Commission to address access reform for non-price cap LECs in a separate proceeding, which the Commission intends to initiate later this year.

Thus, while some may argue that CBT's recent "election" of price cap regulation provides support for a 6.5 percent X-Factor, such arguments do not correctly articulate the reason for CBT's "election." As demonstrated herein, a 6.5 percent X-Factor is inappropriate for CBT since its circumstances are significantly different from the large mandatory price cap LECs.

## **II. THE COMMISSION SHOULD ADOPT A MORE APPROPRIATE LOWER X-FACTOR FOR ELECTIVE PRICE CAP CARRIERS.**

As CBT has consistently maintained throughout this proceeding, the Commission should adopt more than one X-Factor to reflect the heterogeneity among LECs.<sup>5</sup> While CBT faces the same competitive pressures as the mandatory price cap LECs, there are vast differences between CBT and these far larger carriers. The mandatory price cap LECs, as a group, are fairly homogenous. They each have huge, multi-state service territories that encompass urban, rural and suburban areas. CBT, on the other hand, provides service in a single metropolitan area. These scale and scope differences, the mix of services offered by CBT as well as the fact that CBT is already a low cost carrier, relative to the RBOCs make it more difficult for CBT to achieve the same level of productivity gains as the RBOCs.

As the Commission has recognized in the past, the differences between the large LECs and the mid-size and smaller LECs casts doubt on whether the non-mandatory LECs can achieve the same

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<sup>5</sup> See CBT's Comments, CC Docket No. 94-1, Fourth Notice of Proposed Rulemaking, filed January 16, 1996.

productivity levels as the eight largest carriers.<sup>6</sup> In previous orders the Commission has addressed this concern in various ways, including making price caps voluntary for carriers other than the RBOCs and GTE; by including multiple X-Factors, albeit with sharing,<sup>7</sup> for LECs unable to meet the highest productivity level; and through the low-end adjustment mechanism.

Although the Commission recognized the need to address the heterogeneity among LECs in these previous orders, the manner in which the Commission addressed it was never intended to be the long-term solution. The Commission indicates repeatedly throughout its previous orders that although it recognizes that this heterogeneity would seem to call for a different X-Factor for LECs other than the eight largest LECs (i.e., the RBOCs and GTE), the Commission was somewhat at a loss as to how best to derive an appropriate X-Factor for such a diverse group.<sup>8</sup> In the meantime, the Commission's solution was voluntary participation, lower factors with sharing, and the low end-adjustment. CBT submits that these previous orders clearly indicate that it was never the Commission's intent for these to be the long-term solution to the heterogeneity problem.<sup>9</sup>

Now in the present proceeding, in spite of the evidence previously presented in this and other proceedings, the Commission has concluded, without presenting any definitive evidence, that it is no

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<sup>6</sup> In the Matter of Policy and Rules Concerning Rates for Dominant Carriers, CC Docket No. 87-313, Supplemental Notice of Proposed Rulemaking, (FCC 90-89), (hereinafter referred to as the "Supplemental NPRM") released March 12, 1990 at para. 101; In the Matter of Policy and Rules Concerning Rates for Dominant Carriers, CC Docket No. 87-313, Second Report and Order, (FCC 90-314), (hereinafter referred to as the "Second R&O"), released October 4, 1990 at paras. 103, 104, 107, 257, 260; In the Matter of Price Cap Performance Review for Local Exchange Carriers, CC Docket No. 94-1, First Report and Order, (FCC 95-132), (hereinafter referred to as the "First R&O") released April 7, 1995 at para. 165.

<sup>7</sup> As CBT has indicated in previous comments in this proceeding, sharing is inappropriate in a price cap plan, and thus agrees with the Commission's decision to eliminate sharing as a part of the revised price cap rules.

<sup>8</sup> Second Report and Order, CC Docket No. 87-313 at paras. 110, 111, 115, 118, 263 & 265.

<sup>9</sup> Second Report and Order, CC Docket No. 87-313 at paras. 106, 119 & 263.

longer particularly concerned about the impact of heterogeneity on the X-Factor.<sup>10</sup> The Commission now believes that a single X-Factor with a low-end adjustment mechanism is sufficient to address any heterogeneity that may exist.

CBT submits that the Commission has erred in several respects. First, the Commission has arrived at its conclusion in this proceeding based on its recent price cap experience, which indicates that "[s]ubstantially all mandatory price cap LECs have, for some portion of the time under the interim plan, elected the highest X-Factor available under the interim plan."<sup>11</sup> Second, the Commission used only RBOC data in calculating the new X-Factor.<sup>12</sup> Third, although the Commission also indicates that it relied on studies submitted in response to the Price Cap Fourth Further Notice and analysis it has undertaken, it does not cite the specific studies, nor does it attempt to explain why the results of those studies or its analysis lead it to the conclusion that the X-Factor it has set is attainable for most if not all price cap carriers. Fourth, the Commission indicates that "the record contains no convincing proposals that would allow us to readily identify any characteristics by which we could assign individual X-factors to different price cap carriers, so that there could be multiple 'no sharing' X-Factors."<sup>13</sup> Finally, the low end-adjustment, while it may be appropriate to protect carriers due to factors beyond the LEC's control such as a regional or local economic downturn that may cause a short-term drop in productivity, it is not an appropriate means by which to address inherent differences between the large mandatory price cap LECs and the elective price cap LECs.

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<sup>10</sup> Price Cap Order, CC Docket No. 94-1 at para. 157.

<sup>11</sup> Price Cap Order, CC Docket No. 94-1 at para. 157.

<sup>12</sup> Price Cap Order, CC Docket No. 94-1 at para.135.

<sup>13</sup> Price Cap Order, CC Docket No. 94-1 at para. 158.

CBT submits that the most egregious of these errors is the use of only RBOC data and experience to set an X-Factor that will apply to all price cap LECs. In explaining its rationale for using only RBOC data in its calculation, the Commission indicates that based upon results from USTA's model, "including non-RBOC data results in only a 0.1 percent difference in the X-Factor for the period from 1988 to 1994, and no difference from 1989 to 1994."<sup>14</sup> There are several flaws in using this as support for a single X-Factor. First, it relies upon a model the Commission rejects just two paragraphs later.<sup>15</sup> Furthermore, even if it had not rejected the model, a more thorough analysis of the implications of a 0.1 percent difference indicates that the non-RBOC carriers may in fact have a significantly lower X-Factor. Given the fact that the RBOCs represent 76 percent of the market, the fact that the inclusion of non-RBOC data made any difference in the calculation is significant, particularly when GTE accounts for 60 percent of the non-RBOC data, and the Commission has previously recognized the similarities between GTE and the RBOCs<sup>16</sup> for price cap purposes.<sup>17</sup> Assuming GTE's productivity is approximately the same as the RBOCs, the 0.1 percent difference the Commission cites would indicate that the elective price cap LECs' productivity would be significantly lower than that of the mandatory price cap LECs.

A simple analysis shows that a 0.1 percent difference in the industry number translates into an X-Factor for the elective price cap LECs of 3.5 percent instead of the 6 percent (prior to the addition of the

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<sup>14</sup> Price Cap Order, CC Docket No. 94-1 at para. 135.

<sup>15</sup> Price Cap Order, CC Docket No. 94-1 at para. 137.

<sup>16</sup> Second Report and Order, CC Docket No. 87-313, at para. 262.

<sup>17</sup> A simple example may help to illustrate the flaw in the Commission's reasoning that because including non-RBOC data results in only a slight difference in the overall X-factor, there is no need to analyze non-RBOC data. Assume the market consists of two companies. Company A has 90 percent of the market and Company B has 10 percent. Assume Company A's productivity factor is 6 percent while Company B's is 5 percent. A weighted average productivity factor would be 5.9 percent which is clearly much more representative of Company A's actual factor than Company B's.

consumer productivity dividend) factor set based on RBOC data. This was derived as follows: The 0.1 percent difference cited by USTA is approximately 3.3 percent of the USTA estimated productivity factor of 2.9 percent to 3.1 percent ( $0.1\%/3\% = 3.3\%$ ). Applying this 3.3 percent to the Commission's higher 6 percent X-Factor indicates that the inclusion of the non-RBOC data would reduce the Commission's factor by approximately 0.2 percent ( $3.3\% \times 6\% = 5.8\%$ ). Thus, using the Commission's 6 percent factor for the RBOCs and GTE which account for 92 percent of the price cap LECs' access lines, yields an X-Factor for the remaining price cap LECs of 3.5 percent.<sup>18</sup>

Instead of discounting the importance of the non-RBOC data in calculating an X-Factor, the Commission should have recognized its importance in highlighting the differences between mandatory and elective companies. Further, the Commission should have performed a separate X-Factor calculation based solely on data for the elective price cap carriers. CBT submits that this separate calculation would provide a far more valid basis for a comparison before concluding that a single X-Factor is appropriate for all price cap LECs. Although evidence from studies submitted by several non-RBOC LECs, including CBT,<sup>19</sup> in previous proceedings is several years old, these studies properly identify productivity differences that should have been more fully explored by the Commission in the present proceeding before being discounted. Attached to this Petition is a paper prepared by Dr. Jeffrey H. Rohlfs and Kirsten M. Pehrsson of Strategic Policy Research which uses CBT data in the Commission's model. Not surprisingly, the results indicate that the Commission's 6.5 percent X-Factor is inappropriate for CBT.

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<sup>18</sup> Solving the following equation for  $X_E$  (i.e. elective price cap company X-Factor) yields a 3.5% X-Factor for elective price cap companies:

$$\begin{aligned} .92 \times .06 + .08 \times X_E &= .058 \\ .08 X_E &= .0028 \\ X_E &= .035 \end{aligned}$$

<sup>19</sup> See CBT's Comments, CC Docket No. 87-313, Second FNPRM filed June 19, 1989.



Specifically, the paper shows that the Commission's methodology applied to CBT's data yields a productivity factor 1.5 percent to 3.1 percent lower than the model yields using the RBOC data.

The Commission also fails to adequately explain how the recent price cap experiences of the mandatory price cap LECs justify a single X-Factor for all price cap LECs. The behavior of the mandatory price cap LECs is not indicative of how the elective price cap LECs will perform. In fact, examining the financial performance of the elective price cap LECs provides strong evidence that a single higher productivity factor is simply inappropriate. SNET opted for the lowest productivity factor in both years under the interim plan. Citizens also selected the lower X-Factor for most of its study areas for the one year it was under the interim plan. Aliant also opted for the lowest level in one year. When over half of the elective price cap LECs have used the lowest productivity level under the interim plan, it is not reasonable to conclude that recent price cap experience indicates that a single X-Factor of 6.5 percent is appropriate for all elective price cap LECs. The Commission has not adequately considered the recent experiences of the elective companies.

Likewise, the Commission simply rejects as unconvincing proposals which recommend that it identify characteristics which could be used to set different X-Factors for certain groups of companies exhibiting these characteristics. This is not a new issue for the Commission. It is one that the Commission has been aware of throughout the previous proceedings.<sup>20</sup> The evidence clearly suggests that the heterogeneity between the large price cap LECs and the smaller price cap LECs is significant enough to warrant separate treatment. The Commission itself has recognized this in previous orders.<sup>21</sup> The Commission has not conclusively determined the causes of the productivity differences for mandatory

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<sup>20</sup> Second Report and Order, CC Docket No. 87-313, at para. 111.

<sup>21</sup> Second Report and Order, CC Docket No. 87-313, at paras. 103, 104; First Report and Order, CC Docket No. 94-1, at paras. 165, 194.

versus elective companies. However, this does not provide a sufficient reason to ignore the differences and set a single X-Factor based on RBOC experience. If the Commission was able to analyze the complexities of the various productivity studies presented by the USTA, AT&T and others for the RBOCs, and to develop its own methodology, surely it can explore alternatives that address the needs of the elective price cap carriers. At a minimum, it should have run its own model using non-RBOC data. The Rohlfs/Pehrsson paper presents a reasonable basis for how the Commission might determine the proper X-Factor for elective price cap LECs.

### III. CONCLUSION

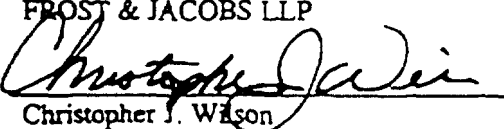
CBT urges the Commission to reconsider its Price Cap Fourth Report and Order as it relates to the non-mandatory price cap LECs. CBT submits that the Commission has failed to adequately address evidence that indicates that the productivity growth attainable by these elective companies is lower than the level that can be attained by the larger LECs. Although CBT herein addresses with specificity its own data, it is clear from the USTA data submitted and prior evidence provided to the Commission, that the Commission's model would support a lower factor than that derived using the RBOC data.

Therefore, the Commission should refine its analysis of non-RBOC data, supplement it with additional data if necessary from the non-mandatory price cap LECs, populate its model and analyze the results. If the results indicate that a lower X-Factor is appropriate, the Commission should then devote the time and resources to properly address how best to set an appropriate productivity factor (or factors) for the elective price cap LECs.

Respectfully submitted,

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## **One Size Does Not Fit All: The Inadequacy of a Single X-Factor for All Price-Cap Companies**

**Jeffrey H Rohlfs  
Kirsten M. Pehrsson<sup>1</sup>**

The Federal Communications Commission (FCC), in its *Fourth Report and Order*,<sup>2</sup> decided to use a single X-Factor for all price-cap local exchange carriers (LECs). In this paper, we argue that using a single X-Factor is unfair and inequitable. We specifically respond to the FCC's evidence justifying a single X-Factor. We also present specific evidence that the FCC's X-Factor is inappropriate for Cincinnati Bell.

### **Interim Plan Versus New Plan**

Under the FCC's interim price-cap plan, LECs had a choice of X-Factors. LECs which chose the highest X-Factor were exempt from any sharing of earnings. LECs which chose a lower X-Factor incurred obligations to share earnings above certain prespecified levels.

A drawback to this approach is that sharing dilutes the incentives of LECs to improve efficiency. In general, one would expect LECs that operate under sharing regimes to be less efficient in the long run than similar companies operating under pure price caps. For this reason, the FCC abandoned the interim approach in favor of a pure price-cap plan.

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<sup>1</sup> Dr. Rohlfs is a principal in Strategic Policy Research, Inc., an economics and telecommunications policy consulting firm located in Bethesda, Maryland. He formerly served as Head of Economic Modeling Research at Bell Labs. Ms. Pehrsson is a Senior Consultant at SPR.

<sup>2</sup> FCC, In the Matter of Price Cap Performance Review for Local Exchange Carriers, Access Charge Reform, *Fourth Report and Order in CC Docket No. 94-1 and Second Report and Order in CC Docket No. 96-262*, CC Docket No. 94-1 and CC Docket No. 96-262, adopted May 7, 1997, released May 21, 1997.

We certainly do not criticize the FCC's decision to eliminate sharing. Nevertheless, the interim plan did have the advantage of distinguishing among LECs. It did not envision that one size of price-cap plan fits all companies.

A variform approach to price caps is desirable, because price-cap LECs are so diverse. At one extreme are urban companies, such as Cincinnati Bell and Lincoln. At the other extreme is Citizens, which serves entirely rural communities. All these companies are very different from the Regional Bell Operating Companies (RBOCs). Each RBOC is 10 times as large as the smaller companies and each serves diverse areas, including urban and rural communities. Conceivably, the RBOCs are sufficiently homogeneous that a single X-Factor is appropriate for all of them. However, it would be an amazing coincidence if that same X-Factor were also appropriate for Cincinnati Bell and Lincoln, as well as Citizens. We demonstrate in this paper that, for Cincinnati Bell at least, there is no such coincidence.

The FCC's new price-cap plan should take account of differences among price-cap LECs. It need not give companies a choice of X-Factors (in exchange for differential sharing obligations). It could instead have different X-Factors for companies with different prospects for productivity growth. We discuss below how multiple X-Factors can be used without diluting efficiency incentives.

## **Response to the FCC's Evidence**

In the *Fourth Report and Order*, the FCC adduces a variety of evidence to justify its decision to use a single X-Factor. In this section, we respond to that evidence.

### **Court Cases**

The FCC cites court cases to demonstrate that using a single cost standard is not "inherently" unreasonable.<sup>3</sup> To be sure, a single standard might be the only practical alternative under some circumstances; e.g., if the regulatory body has minimal staff and/or cost data are lacking. However, these considerations obviously do not apply to the FCC.

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<sup>3</sup> *Ibid.*, ¶ 160.

Indeed, the FCC staff has already developed a computer model of productivity growth. The model that the FCC has disclosed is populated with RBOC data. However, the same model could easily have been populated with data from other LECs.<sup>4</sup> We were able to populate the model with Cincinnati Bell data in a few days' time. The FCC could certainly have done likewise.<sup>5</sup> One would certainly have expected that members of the Commission staff would already have populated the model with data from LECs other than RBOCs in order to observe the results. Yet, no results of applying the model to non-RBOC data were discussed in the *Fourth Report and Order*.

### **Reference to Corrected Norsworthy Model**

In justifying the use of a single X-Factor, the FCC does not refer to its own model. Instead, it refers to the Norsworthy model, as corrected by Christensen.<sup>6</sup> The corrected Norsworthy model yields estimates of productivity growth between 2.9 percent per year and 3.1 percent per year. It is hard to see how these estimates can possibly justify setting an X-Factor of 6.5 percent per year for all price-cap LECs.

### **No Basis for Distinction**

The FCC observes, "Furthermore, the record contains no convincing proposals that would allow us readily to identify any characteristics by which we could assign individual X-Factors to different price cap carriers, so there could be multiple 'no sharing' X-Factors."<sup>7</sup> This statement seems to imply that the FCC, like a court of law, can consider only evidence that is submitted by the adversaries in the case. In reality, the FCC has already ranged far afield of the evidence submitted by the parties. Indeed, the whole new price-cap plan is based on productivity analysis conducted by the FCC Staff — analysis which differs substantially from any that has been submitted by the parties.

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<sup>4</sup> Data from some companies will undoubtedly be incomplete and/or have data problems. Nevertheless, sufficient data are probably available in every case to draw valid inferences about differences in productivity.

<sup>5</sup> Moreover, our task was made more difficult, because the Commission altered its spreadsheet (159chrts.xls) to substitute values for the underlying formulae. We therefore had to take time to reconstruct the formulae. The Commission can use its unaltered spreadsheets and does not have to do such reconstruction.

<sup>6</sup> *Fourth Report and Order*, ¶ 135.

<sup>7</sup> *Ibid.*, ¶ 158.

It is a logical next step to use the same model to investigate the efficacy of different X-Factors for non-mandatory price-cap LECs.

There are several ways that the FCC might distinguish among LECs and have different X-Factors. The simplest possibility is to have one X-Factor for the mandatory price-cap LECs and a different X-Factor for other price-cap LECs. This possibility would be appropriate if the FCC Model indicated that non-mandatory companies are homogeneous but different from the mandatory companies. That outcome does not, however, seem likely. Two other possibilities are suggested by a study that we conducted in 1991 and filed at the FCC. According to that study:

- Companies that already have low unit costs tend to have slower productivity growth.<sup>8</sup> If the FCC model supports this finding, there should be a lower X-Factor for companies that already have low unit costs.
- LECs whose holding companies are smaller tend to have slower productivity growth. If the FCC model supports this finding, there should be a lower X-Factor for small holding companies.<sup>9</sup>

The FCC should test these (and other) possibilities with its own cost model. If differences in productivity growth are not related to any of these factors, the FCC would then have an evidentiary basis to support a single X-Factor. We believe that, on the contrary, such analysis would provide an evidentiary basis for different X-Factors for different companies.<sup>10</sup> Conceivably, there could be a different X-Factor for each company. However, rough justice (and administrative simplicity) could probably be achieved by having relatively few X-Factors for companies that fall into various categories.

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<sup>8</sup> We denoted this finding as the Roseanne Barr effect. That is, it is easier for Roseanne Barr to lose weight than for Arnold Schwarzenegger.

<sup>9</sup> J. Rohlfs, "Differences in Productivity Gains Among Telephone Companies," prepared for CENTEL, September 3, 1991.

<sup>10</sup> We hasten to add that do not necessarily endorse the FCC's methods for estimating productivity. Nevertheless, the FCC should use a consistent analytical approach. Arbitrarily combining parts of one model (e.g., the Staff Model) with parts of other inconsistent models (e.g., the Norsworthy model, as corrected by Christensen) cannot lead to rational policies.

### **Gaming of Multiple X-Factors**

The FCC expresses concern that multiple X-Factors could be gamed by LECs.<sup>11</sup> This concern is certainly understandable. However, gaming would likely be a problem only if the multiple X-Factors are constructed so as to reward poor performance. There would be no problem of gaming if the multiple X-Factors were based on exogenous variables. Furthermore, X-Factors that are lower for low-cost companies encourage good performance. They thereby enhance the efficiency incentives under price caps.

### **Choice of X-Factors**

The FCC observes that virtually all the mandatory price-cap LECs have opted for the higher X-Factor during at least part of the interim price-cap period.<sup>12</sup> However, this finding obviously cannot justify a single X-Factor for *non-mandatory* price-cap LECs. In reality, the elections of non-mandatory price-cap LECs indicate considerably greater heterogeneity. For example, Southern New England Telephone Company elected the lower X-Factor for both years of the interim plan. Alltel has indicated its lower prospects for productivity growth by declining to elect price caps at all. Until this year, Cincinnati Bell did likewise. Furthermore, Cincinnati Bell chose price-caps, in part, to enjoy the greater pricing flexibility that it needs to meet competition — not because it expects productivity growth in excess of 6.5 percent per year. A price-cap regime with multiple X-Factors would have the advantage of encouraging LECs with lower prospects for productivity growth to elect price caps. If the X-Factors are properly crafted, the outcome could be lower prices for consumers, as well as benefits to the firms.

In any event, one must be cautious in using elections of X-Factors to draw inferences about future productivity growth for the following reason:

Price-caps are generally conceived as a win-win policy. That is, the productivity gains resulting from price caps are supposed to be shared by the company and its customers. The company's gains are manifest in earnings above its cost of capital. These earnings are expected to grow over the period of a price-cap plan. They decline, but not necessarily to zero, when a new price-cap plan begins.

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<sup>11</sup> *Fourth Report and Order*, ¶ 159.

<sup>12</sup> *Ibid.*, ¶ 157.



A company that has been under price-caps may elect a higher X-Factor to postpone sharing productivity gains that it made in the past. Such an election does not necessarily indicate that the company expects rapid productivity growth in the future.

## **Analysis of Cincinnati Bell's Productivity**

In this section, we present estimates of Cincinnati Bell's productivity growth. The estimates are based primarily on the productivity model developed by the FCC Staff. We did, however, need to make adjustments with respect to unregulated costs and interstate special access.

### **Unregulated Costs**

The productivity model developed by the FCC Staff does not include outputs associated with unregulated activities. Formally, this omission is manifest in the exclusion of Miscellaneous Revenues, which include revenues from unregulated activities.

As a matter of theory, a productivity model that excludes the outputs of unregulated activities should also exclude the inputs used to produce them. Otherwise, output growth and input growth are inconsistent and cannot be compared to estimate total factor productivity. Nevertheless, the FCC Staff Model does not exclude the inputs used in unregulated activities. Failure to exclude such inputs is theoretically suspect. Nevertheless, that methodology may be reasonable for estimating RBOC productivity growth, since unregulated activities constitute only a small part of RBOC output.

That methodology is not, however, reasonable for Cincinnati Bell. Unregulated activities are a larger fraction of Cincinnati Bell's output than of RBOC output.<sup>13</sup> Furthermore, Cincinnati Bell's unregulated activities have followed quite a different pattern than regulated activities; so regulated activities are not an adequate proxy for unregulated activities.<sup>14</sup>

For this reason, we exclude unregulated inputs from our analysis. Our estimates of unregulated inputs are based on annual ARMIS reports. The detailed procedures are described in the tables in the Appendix.

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<sup>13</sup> An important reason for this difference is that Cincinnati Bell is not subject to all the separate-subsidary requirements that the RBOCs are subject to.

<sup>14</sup> In particular, unregulated activities have declined irregularly over the past several years, while regulated activities have grown fairly steadily.

### **Special Access**

Cincinnati Bell's data on number of special-access lines have large year-to-year fluctuations. We do not understand the reasons for those fluctuations. In any event, the data on number of special-access lines are probably not an adequate quantity index for output for special access. We therefore, exclude special-access from our analysis.

For comparability, we also exclude special access from the FCC's analysis of RBOC productivity. In our analysis, we are not especially concerned with the absolute levels of productivity growth. Rather, we examine the difference in productivity growth between RBOCs and Cincinnati Bell.

### **Results**

Table 1 shows results of applying the FCC's methodology, modified as described above, to Cincinnati Bell data. The table shows that Cincinnati Bell's average price/productivity differential from 1990 to 1995 was 1.8 percent per year. The average from 1991 to 1995 was 2.8 percent per year.

The RBOC results, adjusted for special access, are shown in Table 2. The RBOC price/productivity differential, excluding special access, averaged 4.9 percent per year from 1990 to 1995 and 4.3 percent from 1991 to 1995.

The difference between the Cincinnati Bell and RBOC results is enormous. It amounted to 3.1 percent per year from 1990 to 1995 and 1.5 percent per year from 1991 to 1995. These data strongly suggest that Cincinnati Bell has lower prospects for productivity growth than do RBOCs. This finding is consistent with past studies, which also demonstrated that Cincinnati Bell's productivity growth is slower than that of larger LECs.<sup>15</sup>

### **Efficiency of Cincinnati Bell**

The lower productivity growth does not indicate that Cincinnati Bell is less efficient than the RBOCs. On the contrary, Cincinnati Bell is a low-cost company. In particular, Cincinnati Bell's price for interstate switched access was only \$0.020 per minute in 1995. This can be compared to

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<sup>15</sup> See J. Rohlfs, "Incentive Regulation and Estimates of Productivity," prepared for Cincinnati Bell Telephone Company (Attachment I), June 9, 1989. See also Rohlfs (1991).

the average RBOC price of \$0.028 per minute. The Cincinnati Bell price was almost 40 percent lower than the RBOC price. These price differences reflect differences in unit costs allocated to the interstate jurisdiction. As discussed above, further productivity gains are more difficult for companies that are already efficient.

## **Conclusions**

Our productivity analysis demonstrates that Cincinnati Bell has had slower productivity growth than the RBOCs. The slow growth does not indicate poor performance by Cincinnati Bell. On the contrary, Cincinnati Bell has lower unit costs than the RBOCs. It is difficult for Cincinnati Bell (or any firm) to improve its good productivity at the same rate that higher-cost firms can improve their productivity.

More generally, one size of price-cap plan does not fit all LECs. It is unfair and inequitable for the FCC to use the same X-Factor for firms that have substantially different prospects for productivity growth. Multiple X-Factors can be developed and used without significant administrative burdens and without allowing gaming by LECs.

Table 1: Cincinnati Bell

Chart D1: Components of FCC LEC Price Cap X-Factor [Excluding CPD], Excluding Special Access

Year	Input Price Growth Rates			Total Factor Productivity Growth Rates			CBT
	CBT	U.S. Nonfarm Business Sector	Differential	CBT	U.S. Nonfarm Business Sector	Differential	Price/Productivity Differential
	A	B	C = B - A	D	E	F = D - E	G = C + F
1990	-0.03%	3.31%	3.34%	-6.60%	-0.47%	-6.13%	-2.8%
1991	2.11%	2.06%	-0.05%	-0.66%	-0.89%	0.23%	0.2%
1992	-5.09%	2.88%	7.97%	-1.82%	1.10%	-2.92%	5.1%
1993	-1.37%	3.72%	5.08%	3.41%	0.55%	2.86%	7.9%
1994	6.49%	3.50%	-2.99%	5.02%	0.50%	4.52%	1.5%
1995*	-1.30%	3.09%	4.39%	-5.19%	0.16%	-5.35%	-1.0%
Averages							
[1990-95]	0.14%	3.09%	2.96%	-0.97%	0.16%	-1.13%	1.8%
[1991-95]	0.17%	3.05%	2.88%	0.15%	0.28%	-0.13%	2.8%

\*Columns B and E for 1995 are estimated, based on the average of 1990-1994.

Table 2: RBOCs

Chart D1: Components of FCC LEC Price Cap X-Factor [Excluding CPD], Excluding Special Access

Year	Input Price Growth Rates			Total Factor Productivity Growth Rates			LEC
	Total	U.S. Nonfarm	Differential	Total	U.S. Nonfarm	Differential	Price/Productivity
	RBOCs	Business Sector		RBOCs	Business Sector		Differential
	A	B	C = B - A	D	E	F = D - E	G = C + F
1990	1.88%	3.31%	1.43%	5.69%	-0.47%	6.16%	7.6%
1991	-0.85%	2.06%	2.91%	0.78%	-0.89%	1.67%	4.6%
1992	2.68%	2.88%	0.21%	3.89%	1.10%	2.79%	3.0%
1993	2.27%	3.72%	1.44%	2.14%	0.55%	1.59%	3.0%
1994	-0.19%	3.50%	3.69%	1.34%	0.50%	0.84%	4.5%
1995*	1.31%	3.09%	1.78%	4.85%	0.16%	4.69%	6.5%
Averages							
[1990-95]	1.18%	3.09%	1.91%	3.12%	0.16%	2.96%	4.9%
[1991-95]	1.04%	3.05%	2.01%	2.60%	0.28%	2.32%	4.3%

\*Columns B and E for 1995 are estimated, based on the average of 1990-1994.

**APPENDIX**

**CINCINNATI BELL ESTIMATES**  
**BASED ON**  
**FCC STAFF MODEL**

## Cincinnati Bell Estimates based on FCC Staff Model

**Chart D1: Components of FCC LEC Price Cap X-Factor [Excluding CPD], Excluding Special Access**

Year	Input Price Growth Rates			Total Factor Productivity Growth Rates			CBT
	CBT	U.S. Nonfarm Business Sector	Differential	CBT	U.S. Nonfarm Business Sector	Differential	Price/Productivity Differential
	A	B	C = B - A	D	E	F = D - E	G = C + F
1990	-0.03%	3.31%	3.34%	-6.60%	-0.47%	-6.13%	-2.8%
1991	2.11%	2.06%	-0.05%	-0.66%	-0.89%	0.23%	0.2%
1992	-5.09%	2.88%	7.97%	-1.82%	1.10%	-2.92%	5.1%
1993	-1.37%	3.72%	5.08%	3.41%	0.55%	2.86%	7.9%
1994	6.49%	3.50%	-2.99%	5.02%	0.50%	4.52%	1.5%
1995*	-1.30%	3.09%	4.39%	-5.19%	0.16%	-5.35%	-1.0%
Averages							
[1990-95]	0.14%	3.09%	2.96%	-0.97%	0.16%	-1.13%	1.8%
[1991-95]	0.17%	3.05%	2.88%	0.15%	0.28%	-0.13%	2.8%

\*Columns B and E for 1995 are estimated, based on the average of 1990-1994.

## Cincinnati Bell Estimates based on FCC Staff Model

**Chart D2: Cincinnati Bell Interstate Revenues**

	End User	Interstate Switched Access	Special Access	Total Interstate
	A	B	C	D = A + B + C
Year				
1985	#N/A	#N/A	#N/A	#N/A
1986	#N/A	#N/A	#N/A	#N/A
1987	#N/A	#N/A	#N/A	#N/A
1988	\$23,263,000	\$44,574,000	\$0	\$67,837,000
1989	\$27,150,000	\$41,133,000	\$0	\$68,283,000
1990	\$32,865,000	\$38,202,000	\$0	\$71,067,000
1991	\$34,284,000	\$38,906,000	\$0	\$73,190,000
1992	\$35,775,000	\$45,592,000	\$0	\$81,367,000
1993	\$37,435,000	\$40,597,000	\$0	\$78,032,000
1994	\$39,793,000	\$49,547,000	\$0	\$89,340,000
1995	\$41,830,000	\$51,727,000	\$0	\$93,557,000

Sources: Column A: SOCC (account 5081), Column B: SOCC (account 5082)

**Chart D3: Cincinnati Bell REVENUES (Excluding Miscellaneous Services)**

	Local Service	Intrastate Toll and Intrastate Access	Interstate	Total
	A	B	C	D = A + B + C
Year				
1985	#N/A	#N/A	#N/A	#N/A
1986	#N/A	#N/A	#N/A	#N/A
1987	#N/A	#N/A	#N/A	#N/A
1988	\$255,099,000	\$68,565,000	\$67,837,000	\$391,501,000
1989	\$268,379,000	\$66,804,000	\$68,283,000	\$403,466,000
1990	\$277,664,000	\$70,689,000	\$71,067,000	\$419,420,000
1991	\$286,191,000	\$70,969,000	\$73,190,000	\$430,350,000
1992	\$293,371,000	\$71,220,000	\$81,367,000	\$445,958,000
1993	\$304,104,000	\$77,663,000	\$78,032,000	\$459,799,000
1994	\$329,269,000	\$70,790,000	\$89,340,000	\$489,399,000
1995	\$352,598,000	\$63,767,000	\$93,557,000	\$509,922,000

Sources: Column A: SOCC (account 520)  
Column B: SOCC (accounts 5084+525)



### Cincinnati Bell Estimates based on FCC Staff Model

Chart D4: Calculation of Fisher Ideal Index for Interstate Output

Year	Revenue Shares			Quantities			Output Indices			Interstate Output Quantity Index	Growth
	End User	Interstate Switched Access	Special Access	Access Lines	Switched Access Minutes	Special Access Lines	Laspeyres A	Paasche B	Fisher Relative C=(A*B)^0.5		
1985	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
1986	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
1987	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
1988	34.29%	65.71%	0.00%	750,824	1,558,531,719	1	#N/A	#N/A	#N/A	1.000000	#N/A
1989	39.76%	60.24%	0.00%	769,319	1,685,109,383	1	1.061812	1.057986	1.059897	1.059897	5.82%
1990	46.25%	53.75%	0.00%	789,619	1,788,450,590	1	1.047434	1.044877	1.046155	1.108817	4.51%
1991	46.84%	53.16%	0.00%	797,786	1,852,206,578	1	1.023946	1.023639	1.023792	1.135198	2.35%
1992	43.97%	56.03%	0.00%	816,791	1,985,240,120	1	1.049339	1.050176	1.049757	1.191683	4.86%
1993	47.97%	52.03%	0.00%	837,999	2,132,281,286	1	1.052918	1.050440	1.051678	1.253267	5.04%
1994	44.54%	55.46%	0.00%	866,657	2,336,493,325	1	1.066232	1.067464	1.066848	1.337045	6.47%
1995	44.71%	55.29%	0.00%	906,296	2,535,565,896	1	1.067624	1.067195	1.067409	1.427174	6.52%

Sources: Access Lines: SOCC, Table 2.10  
Switched Access Lines: CBT Interstate MOU data

Average [1986-94] #N/A  
Average [1986-95] #N/A

Chart D5: Calculation of Fisher Ideal Index for Total Company Output

Year	Revenue Shares			Quantities			Output Indices			Total Company Output Index	Growth
	Local Service	Intrastate Toll and Intrastate Access	Interstate	Number of Local Calls	Intrastate DEMs	Interstate Quantity Index	Laspeyres A	Paasche B	Fisher Relative C=(A*B)^0.5		
1985	#N/A	#N/A	#N/A	#NA	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
1986	#N/A	#N/A	#N/A	#NA	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
1987	#N/A	#N/A	#N/A	#NA	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
1988	65.16%	17.51%	17.33%	3,245,000,000	620,809,848	1.000000	#N/A	#N/A	#N/A	1.000000	#N/A
1989	66.52%	16.56%	16.92%	3,629,000,000	763,180,000	1.059897	1.127649	1.124654	1.126151	1.126151	11.89%
1990	66.20%	16.85%	16.94%	3,439,000,000	861,957,000	1.108817	0.994415	0.990309	0.992360	1.117547	-0.77%
1991	66.50%	16.49%	17.01%	3,494,697,000	844,393,000	1.135198	1.011319	1.011246	1.011282	1.130155	1.12%
1992	65.78%	15.97%	18.25%	3,516,024,000	879,090,000	1.191683	1.019297	1.019307	1.019302	1.151970	1.91%
1993	66.14%	16.89%	16.97%	3,707,769,000	879,535,000	1.253267	1.045385	1.044526	1.044955	1.203757	4.40%
1994	67.28%	14.46%	18.26%	3,956,269,000	905,837,000	1.337045	1.060723	1.061457	1.061090	1.277294	5.93%
1995	69.15%	12.51%	18.35%	3,945,715,000	914,284,295	1.427174	1.011860	1.011013	1.011436	1.291901	1.14%

Sources: Number of Local Calls: SOCC, Table 2.10  
Intrastate DEMs: NECA and CBT data

Average [1986-94] #N/A  
Average [1986-95] #N/A